Dell Latitude E4310 Service Manual

Working on Your Computer
Removing and Replacing Parts
Specifications
Diagnostics
System Setup

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell n Series computer, any references in this document to Microsoft Windows operating systems are not applicable.

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System Setup

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- Entering System Setup
- Boot Menu
- Navigation Keystrokes
- System Setup Menu Options

Your computer offers the following BIOS and System Setup options:

- Access System Setup by pressing <F2>
- Bring up a one-time boot menu by pressing <F12>
- Access the Intel AMT settings by pressing <Ctrl> + <P>

Entering System Setup

Press <F2> to enter System Setup and make changes to user-definable settings. If you have trouble entering System Setup using this key, press <F2> when the keyboard lights first flash.

Boot Menu

Press <F12> when the Dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the computer. **Diagnostics** and **Enter Setup** options are also included in this menu. The devices listed on the boot menu depend on the bootable devices installed in the computer. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the computer. Using the boot menu does not make any changes to the boot order stored in the BIOS.

Navigation Keystrokes

Use the following keystrokes to navigate System Setup screens.

Navigation	
Action	**Keystroke(s)**
Expand and collapse field	<Enter>
Exit BIOS	<Esc> or click **Exit**
Apply settings	click **Apply**
Reset defaults	click **Load Defaults**

System Setup Menu Options

The following tables describe the menu options for the System Setup program.

General	
Option	**Description**
System Information	Lists the primary hardware features of your computer. There are no configurable options in this section. - System Information - Memory Information - Processor Information - Device Information
Battery Information	Displays the status of the battery and the type of AC adapter connected to the computer.
Boot Sequence	Specifies the order in which the computer attempts to find an operating system. - Diskette drive - Internal HDD (IRRT) - USB Storage Device - CD/DVD/CD-RW Drive - Onboard NIC - Cardbus NIC To change the order in which the computer attempts to find an operating system, select the device to be changed in the list then click the up/down arrows or use the keyboard <PgUp> or <PgDn> keys to change the boot order of the device. Clear the check boxes to remove a device from the list of bootable devices.
Date/Time	Displays current date and time settings.

NOTE: System Configuration contains options and settings related to integrated system devices. Depending on your computer and installed devices, the items listed in this section may or may not appear.

System Configuration	

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. The options are: **Disabled**, **Enabled**, and **Enabled w/PXE** Default Setting: **Enabled w/PXE**
Parallel Port	Allows you to configure the parallel port on the docking station. The options are: **Disabled**, **AT**, **PS2**, and **ECP** Default Setting: **AT**
Serial Port	Allows you to configure the integrated serial port. The options are: **Disabled**, **COM1**, **COM2**, **COM3**, and **COM4** Default Setting: **COM1**
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: **Disabled**, **ATA**, **AHCI**, and **RAID On** Default Setting: **RAID On** **NOTE:** SATA is configured to support RAID mode.
Miscellaneous Devices	Allows you to enable or disable the following devices: - External USB Port - Microphone - eSATA Ports - Media Card - Internal Modem - Fixed Bay - ExpressCard - Hard Drive Free Fall Protection - Camera and Microphone Default setting: **All are enabled**.
Latitude ON Reader	Allows you to configure the operating mode of the Latitude ON Reader. Default Setting: **Enable Latitude ON reader**
Keyboard Illumination	Allows you to configure the keyboard illumination feature. The options are: **Disabled**, **Auto ALS and Input**, and **Auto Input Only**

Video	
Option	**Description**
Ambient Light Sensor	Allows you to configure the Ambient Light Sensor. Default Setting: Disabled
LCD Brightness	Allows you to set the display brightness depending up on the power source (**On Battery** and **On AC**).

Security	
Option	**Description**
Admin Password	Allows you to set, change, or delete the administrator (admin) password. **NOTE**: You must set the admin password before you set the system or hard drive password. **NOTE:** Successful password changes take effect immediately. **NOTE:** Deleting the admin password automatically deletes the system password as well. Default Setting: **Not Set**
System Password	Allows you to set, change, or delete the system password. When set, your computer requests you to enter the system password every time your computer turns on or restarts. Default Setting: **Not Set**
Internal HDD Password	Allows you set, change, or delete the password on the system's internal hard disk drive (HDD). Successful changes take place immediately and require a system restart. The HDD password travels with the hard drive, so the HDD is protected even when installed in another system.
Password Bypass	Allows you to bypass the system and internal hard drive password prompts when your computer restarts or resumes from standby. You can set **Password Bypass** to: **Disabled** and **Reboot Bypass**. **NOTE:** You cannot bypass the system or hard drive password when you turn on your computer that has been turned off. Default Setting: **Disabled**
Password Change	Allows you to enable of disable changes to the system and hard drive passwords when the admin password is set. Default Setting: **Allow Non-Admin Password Changes checked**
Strong Password	Allows you to enable of disable the option to enforce strong passwords. If enabled, all passwords set on the computer must contain at least one uppercase character, one lowercase character and be at least 8 characters long. Enabling this feature automatically changes the default minimum password length to 8 characters. Default Setting: **Disabled**
TPM Security	Allows you to enable or disable the Trusted Platform Module (TPM) on the computer. **NOTE**: Disabling this option does not change any settings you may have made to the TPM, or delete any information or keys you may have stored there. When TPM is enabled, the following options are available:

	• **Deactivate—**Disables the TPM. The TPM restricts access to the stored owner information and does not execute any commands that use TPM resources. • **Activate—**Enables and activates the TPM. • **Clear—**Clears the owner information stored in the TPM. Default Setting: **Disabled**
Computrace®	Allows you to enable or disable the optional Computrace software. The options are **Deactivate**, **Disable**, and **Activate**. **NOTE**: The **Activate** and **Disable** options will permanently activate or disable the feature and no further changes will be allowed. Default Setting: **Deactivate**
CPU XD Support	Allows you to enable or disable the Execute Disable mode of the processor. Default setting: **Enabled**
Non-Admin Setup Changes	Allows you to determine whether changes to the system setup options are allowed when an Administrator password is set. If disabled, the system setup options are locked by the admin password. Default Setting: **Disabled**
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Admin Setup Lockout	Allows you to prevent users from entering system setup when an Administrator password is set.

Performance	
Option	**Description**
Multi Core Support	Enables or disables multi-core support for the processor. Options are: **All**, **1**, and **2** Default Setting: **All**
Intel® SpeedStep™	Enables or disables the Intel SpeedStep feature. Default Setting: **Enabled**
Intel® TurboBoost™	Enables or disables the Intel TurboBoost performance. Default Setting: **Enabled**

Power Management	
Option	**Description**
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. Default Setting: Wake on AC **Disabled**
Auto On Time	Allows you to set the time at which the computer must turn on automatically. You can set the number of days, if any, when you would like the system to turn on automatically. The settings are **Disabled**, **Everyday**, or **Weekdays**. Default setting: **Disabled**
USB Wake Support	Allows you to enable or disable the ability of USB devices to wake the computer from Standby. This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed when the computer is in Standby mode, the system setup will remove power from all of the USB ports to conserve battery power. Default Setting: **Disabled**
Wake on LAN / WLAN	Allows the computer to turn on by a special LAN signal or from Hibernate mode when triggered by a special wireless LAN signal. Wake-up from the Standby mode is unaffected by this setting and must be enabled in the operating system. • **Disabled** — Do not allow the system to power on when it receives a wake-up signal from the LAN or wireless LAN. • **LAN Only** — Allow the system to be powered on by special LAN signals. • **WLAN Only** — Allow the system to be powered on by special WLAN signals. • **LAN or WLAN** — Allow the system to be powered on by special LAN or wireless LAN signals. Default Setting: **Disabled**
ExpressCharge	Allows you to enable or disable the ExpressCharge feature. **NOTE:** ExpressCharge may not be available for all batteries. Default Setting: **ExpressCharge**
Charger Behavior	Allows you to enable or disable the battery charger. If disabled, the battery will not charge or lose power when the computer is connected to an AC adapter. Default setting: **Enabled**

POST Behavior	
Option	**Description**
Adapter Warnings	Allows you to enable or disable the BIOS warning messages when you use certain power adapters. The BIOS displays these messages if you attempt to use a power adapter that has too little capacity for your configuration. The factory default setting is **Enabled**.

Keypad (Embedded)	Allows you to select one of two methods to enable the keypad that is embedded in the internal keyboard. • **Fn Key Only** — The keypad is only enabled when you hold down the <Fn> key. • **By Num Lk** — The keypad is enabled when (1) the Num Lock LED is on and (2) no external keyboard is attached. Note that the system might not notice immediately when an external keyboard is detached. **NOTE:** When system setup is running, this field has no effect—system setup works in the **Fn Key Only** mode. Default setting: **Fn Key Only**.
Mouse/Touchpad	Allows you to select the pointing devices to use. The options are: • **Serial Mouse** — Disable the integrated touch pad when an external Serial mouse is present. • **PS/2 Mouse** — Disable the integrated touch pad when an external PS/2 mouse is present. • **Touchpad-PS/2** — Leave the integrated touch pad enabled when an external PS/2 mouse is present. Default setting: **Touchpad-PS/2**.
Numlock LED	Allows you to enable or disable the Num Lock LED when the computer boots. Default setting: **Enabled**.
USB Emulation	Defines how the system steup handles USB devices. **NOTE:** USB Emulation is always enabled during POST. Default setting: **Enabled**.
Fn Key Emulation	Allows you to use the <Scroll Lock> key on an external PS/2 keyboard the same way you use the <Fn> key on the computer's internal keyboard. **NOTE:** USB keyboards cannot emulate the <Fn> key if you are running an ACPI operating system such as Microsoft Windows XP. USB keyboards will only emulate the <Fn> key in non-ACPI mode (e.g., when you are running a DOS). Default setting: **Enabled**.
Fast Boot	Allows you to enable or disable the Fast Boot feature. The following options are available: • **Minimal** — Boot quickly unless the BIOS has been updated, memory changed, or the previous POST did not complete. • **Thorough** — Do not skip any steps in the boot process. • **Auto** — Allow the operating system to control this setting (this works only when the operating system supports Simple Boot Flag). Default setting: **Minimal**
Intel Fast Call for Help	Used in conjunction with iAMT 4.0. Allows users to initiate contact with a management console while residing outside of the corporate infrastructure (i.e. remote location, behind a firewall or NAT, etc.) Use the check box to enable or disable this feature.

Virtualization Support	
Option	**Description**
Virtualization	Specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization Technology. Default setting: **Enabled**.
VT for Direct I/O	Specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization Technology for Direct I/O. Default setting: **Disabled**.
Trusted Execution	Specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. Virtualization Technology and Virtualization Technology for Direct I/O must be enabled to use this feature Default setting: **Disabled**.

Wireless	
Option	**Description**
Wireless Devices	Allows you to determine the wireless devices that will be controlled by the wireless switch: **Internal WWAN**, **Internal WLAN**, and **Internal Bluetooth.**
Wireless Switch	Allows you to enable or disable the following wireless devices: **Internal WWAN**, **Internal WLAN**, and **Internal Bluetooth.**

Maintenance	
Option	**Description**
Service Tag	Displays your computer's Service Tag. If for some reason the Service Tag was not already set, you would be able to use this field to set it. If a Service Tag has not been set for your computer, the computer will automatically bring up the Service Tag screen when you enter the system setup. You will be prompted to enter the Service Tag.
Asset Tag	Allows you to create an Asset Tag. This field can only be updated if the Asset Tag is not already set.

System Logs	
Option	**Description**

BIOS Events	Allows you to view and clear BIOS POST events. It includes the date and time of the event as well as the LED code.
DellDiag Events	Allows you to view the diagnostic results from Dell Diagnostics and PSA. It includes the time and date, the diagnostic and version which was run and the resulting code.
Thermal Events	Allows you to view and clear thermal events. It includes the date and time as well as the name of the event.
Power Events	Allows you to view and clear power events. It includes the date and time of the event as well as the power state and reason.

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Diagnostics

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- Device Status Lights
- Battery Status Lights
- Battery Charge and Health

Device Status Lights

Turns on when you turn on the computer and blinks when the computer is in a power management mode.

Turns on when the computer reads or writes data.

Turns on steadily or blinks to indicate battery charge status.

Turns on when wireless function wireless local area network (WLAN) or WiMAX or wireless wide area network (WWAN) or Bluetooth or Ultra-wide band (UWB) cards is enabled. Use the wireless switch to turn off the wireless function.

Battery Status Lights

If the computer is connected to an electrical outlet, the battery light operates as follows:

- **Alternately blinking amber light and blue light** — An unauthenticated or unsupported, non-Dell AC adapter is attached to your laptop.
- **Alternately blinking amber light with steady blue light** — Temporary battery failure with AC adapter present.
- **Constantly blinking amber light** — Fatal battery failure with AC adapter present.
- **Light off** — Battery in full charge mode with AC adapter present.
- **Blue light on** — Battery in charge mode with AC adapter present.

Battery Charge and Health

To check the battery charge, press and release the status button on the battery charge gauge to illuminate the charge-level lights. Each light represents approximately 20 percent of the total battery charge. For example, if four lights are on, the battery has 80 percent of its charge remaining. If no lights appear, the battery has no charge.

To check battery health using the charge gauge, press and hold the status button on the battery charge gauge for at least 3 seconds. If no lights appear, the battery is in good condition and more than 80 percent of its original charge capacity remains. Each light represents incremental degradation. If five lights appear, less than 60 percent of the charge capacity remains, and you should consider replacing the battery.

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Removing and Replacing Parts

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- ExpressCard
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- Coin-Cell Battery
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- Display Assembly
- Display Panel
- Palm Rest
- Display Closure Sensor
- Speaker Assembly
- DC-In Connector
- I/O Board
- Mini Card Door
- Subscriber Identity Module (SIM) Card
- Secure Digital (SD) Card
- LED Covers
- Hard Drive
- Memory
- Wireless Local Area Network (WLAN) Card
- Ultra-Wide Band(UWB)/Latitude ON Flash Card
- Display Bezel
- Microphone Board
- Bluetooth Card and Cable
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- System Board
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Specifications

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- Display
- Touchpad
- AC Adapter
- Environmental
- Processor
- Video
- Communications
- ExpressCards
- Fingerprint Reader (Optional)
- Keyboard
- Battery
- Physical

NOTE: Offerings may vary by region. For more information regarding the configuration of your computer, click **Start →Help and Support** and select the option to view information about your computer.

System Information	
Chipset	Mobile Intel QS57 Express chipset
Data bus width	64 bits
DRAM bus width	64 bits
Flash EPROM	two SPI chips: one 32 Mbits and one 64 Mbits
PCI bus	32 bits

Processor	
Types	Intel Core i3 series Intel Core i5 series Intel Core i7 series
L1 cache	32 KB instruction and 32 KB data per core
L2 cache	256 KB
L3 cache	up to 4 MB
External bus frequency	1066 MHz

Memory	
Type	DDR3
Speed	1066 MHz
Connectors	two SODIMM sockets
Module capacities	1 GB, 2 GB, or 4 GB
Minimum memory	1 GB
Maximum memory	8 GB **NOTE:** Only 64-bit operating systems support more than 4 GB memory.

Video	
Type	integrated on system board
Controller	Intel HD graphics
Output	15-pin VGA connector

Audio	
Type	two-channel high definition audio
Controller	IDT 92HD81
Speakers	two
Internal speaker amplifier	1 W per channel
Volume controls	volume up, volume down, and mute buttons

Communications	
Network adapter	Intel 10/100/1000 Ethernet LAN on system board
Wireless	ı WLAN half mini card ı WLAN/WiMAX half mini card ı WWAN full mini card ı Bluetooth card ı Ultra-wide band (UWB) card

GPS	supported by Mobile Broadband full mini card

Ports and Connectors	
Audio	one combo microphone/headphone connector
Video	15-pin VGA connector
Network adapter	RJ-45 connector
USB, eSATA	ı one USB 2.0 compliant connector ı one USB 2.0/eSATA connector
Smart-card reader	integrated smart-card reader
Mini card support (internal expansion slots)	ı one dedicated half mini card slot for WLAN ı one dedicated full mini card slot for WWAN ı one half mini card slot for UWB

ExpressCards	
NOTE: The ExpressCard slot is designed only for ExpressCards. It does NOT support PC Cards.	
Cards supported	34 mm ExpressCards

Contactless Smart Card (optional)	
Supported Smart Cards/Technologies	ISO14443A — 106 kbps, 212 kbps, 424 kbps, and 848 kbps ISO14443B — 106 kbps, 212 kbps, 424 kbps, and 848 kbps ISO15693 HID iClass FIPS201 NXP Desfire

Fingerprint Reader (Optional)	
Type	swipe

Display	
Type	13.3 inch HD white light-emitting diode (WLED)
Active area (X/Y)	HD — 293.42 mm x 164.97 mm (11.55 inches x 6.50 inches)
Dimensions:	
Height	183.6 mm (7.23 inches)
Width	308.1 mm (12.13 inches)
Diagonal	337.82 mm (13.3 inches)
Maximum resolution	1366 x 768 at 262 K colors
Maximum brightness	220 nits
Operating angle	0 degrees (closed) to 135 degrees
Refresh rate	60 Hz
Viewing angles	
Horizontal	40 degrees / 40 degrees
Vertical	15 degrees / 30 degrees
Pixel pitch	0.2148 mm

Keyboard	
Number of keys	ı United States and Canada: 83 keys ı Europe: 84 keys ı Japan: 87 keys
Layout	QWERTY/AZERTY/Kanji
Size	full sized (19.05 mm key pitch)

Touchpad	
Active area	
X-axis	70.00 mm (2.76 inches)
Y-axis	37.00 mm (1.46 inches)
Resolution	600 dpi

Battery	

Type	• 3-cell, 2.8 AHr, 30 WHr • 6-cell, 2.8 AHr, 60 WHr • 3-year life-time 6-cell, 2.5 AHr, 54 WHr • battery slice, 48 WHr
Charge time with computer off	• 3-cell 30 WHr, 6-cell 60 WHr, and battery slice 48 WHr — approximately 1 hour to 80% capacity and 2 hours to 100% capacity • 6-cell 3-year life-time 54WHr — approximately 3 hours to 100% capacity
Operating time	battery operating time varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Life span (approximate)	approximately 300 charge/discharge cycles
Depth	
3-cell	28.80 mm (1.13 inches)
6-cell	51.10 mm (2.01 inches)
Height	21.90 mm (0.86 inches)
Width	189.80 mm (7.47 inches)
Weight:	
3-cell	0.19 kg (0.42 lb)
6-cell	0.34 kg (0.75 lb)
battery slice	0.63 kg (1.39 lb)
Voltage	11.1 VDC (6-cell and 3-cell)
Temperature range	
Operating	0 °C to 35 °C (32 °F to 95 °F)
Storage	–40 °C to 65 °C (–40 °F to 149 °F)
Coin-cell battery	3 V CR2032 lithium

AC Adapter	
Input voltage	100 VAC–240 VAC
Input current (maximum)	1.5 A
Input frequency	50 Hz–60 Hz
Output power	65 W or 90 W
Output current	
65 W	4.34 A (maximum at 4-second pulse) 3.34 A (continuous)
90 W	5.62 A (maximum at 4-second pulse) 4.62 A (continuous)
Output Voltage	19.5 +/– 1.0 VDC
Width	
65 W	66.00 mm (2.60 inches)
90 W	70.00 mm (2.75 inches)
Height	
65 W	16.00 mm (0.63 inches)
90 W	16.00 mm (0.63 inches)
Depth	
65 W	127.00 mm (5.00 inches)
90 W	147.00 mm (5.78 inches)
Temperature range	
Operating	0 °C to 40 °C (32 °F to 104 °F)
Storage	–40 °C to 70 °C (–40 °F to 158 °F)

Physical	
Front height	26.50 mm (1.04 inches)
Back height	30.53 mm (1.20 inches)
Width	323.00 mm (12.72 inches)
Depth	215.00 mm (8.47 inches)
Weight (minimum)	1.54 kg (3.40 lb)

Environmental	
Temperature range	
Operating	0 °C to 35 °C (32 °F to 95 °F)

Non-operating	−40 °C to 65 °C (−40 °F to 149 °F)
Relative humidity (maximum)	
Operating	10 % to 90 % (noncondensing)
Non-operating	5 % to 95 % (noncondensing)
Maximum vibration (using a random vibration spectrum that simulates user environment)	
Operating	0.66 GRMS
Non-operating	1.3 GRMS
Maximum shock (measured with hard drive in operating status and a 2-ms half-sine pulse for operating specification; also measured with hard drive in head-parked position and a 2-ms halfsine pulse for storage specification)	
Operating	143 G
Non-operating	163 G
Altitude (maximum)	
Operating	−15.2 m to 3048 m (−50 ft to 10,000 ft)
Storage	−15.2 m to 10,668 m (−50 ft to 35,000 ft)

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Battery

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WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Battery

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Slide the battery latch to release the battery.

3. Slide the battery out and remove it from the computer.

Replacing the Battery

To replace the battery, perform the above steps in reverse order.

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Bluetooth Card and Cable

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Removing the Bluetooth Card and Cable

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the ExpressCard.
4. Remove the hard drive assembly.
5. Remove the hinge covers.
6. Remove the mini card door.
7. Remove the LED covers.
8. Remove the keyboard.
9. Remove the display assembly.
10. Remove the palm rest.
11. Remove the screw that secures the Bluetooth card to the palm rest.
12. Disconnect the Bluetooth data cable from the Bluetooth card and remove the Bluetooth card from the computer.
13. Gently release the Bluetooth data cable from the palm rest and remove it from the computer.

Replacing the Bluetooth Card and Cable

To replace the Bluetooth card and cable, perform the above steps in reverse order.

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Coin-Cell Battery

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Removing the Coin-Cell Battery

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the memory door.
4. Disconnect the coin-cell battery cable from its connector on the system board.
5. Slide the coin-cell battery out of the computer.

Replacing the Coin-Cell Battery

To replace the coin-cell battery, perform the above steps in reverse order.

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DC-In Connector

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Removing the DC-In Connector

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the SIM.
4. Remove the ExpressCard.
5. Remove the SD memory card.
6. Remove the hard drive assembly.
7. Remove the hinge covers.
8. Remove the mini card door.
9. Remove the wireless local area network (WLAN) card.
10. Remove the memory door.
11. Remove the memory.
12. Remove the coin-cell battery.
13. Remove the optical drive.
14. Remove the LED covers.
15. Remove the keyboard.
16. Remove the display assembly.
17. Remove the palm rest.
18. Remove the system board.
19. Disconnect the DC-In connector's cable from the system board.
20. Remove the DC-In connector from the computer.

Replacing the DC-In Connector

To replace the DC-In connector, perform the above steps in reverse order.

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ExpressCard

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Removing the ExpressCard

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Press in on the ExpressCard and release it from the computer.
3. Slide the ExpressCard out of the computer.

Replacing the ExpressCard

To replace the ExpressCard, perform the above steps in reverse order.

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Display Closure Sensor

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Removing the Display Closure Sensor

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the ExpressCard.
4. Remove the hard drive assembly.
5. Remove the hinge covers.
6. Remove the mini card door.
7. Remove the LED covers.
8. Remove the keyboard.
9. Remove the display assembly.
10. Remove the palm rest.
11. Remove the screw that secures the display closure sensor to the computer.
12. Lift up and turn over the display closure sensor.
13. Disconnect the cable from the display closure sensor and remove it from the computer.

Replacing the Display Closure Sensor

To replace the display closure sensor, perform the above steps in reverse order.

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Hard Drive

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Removing the Hard Drive

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the screws that secure the hard drive from the computer.
4. Slide the hard drive and remove it from the computer.
5. Remove the screw that secures the hard drive bracket to the hard drive.
6. Pull the hard drive bracket away from the hard drive.

Replacing the Hard Drive

To replace the hard drive, perform the above steps in reverse order.

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DC-In Connector

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Heat Sink and Processor Fan

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the SIM.
4. Remove the ExpressCard.
5. Remove the SD memory card.
6. Remove the hard drive assembly.
7. Remove the hinge covers.
8. Remove the mini card door.
9. Remove the wireless local area network (WLAN) card.
10. Remove the memory door.
11. Remove the memory.
12. Remove the coin-cell battery.
13. Remove the optical drive.
14. Remove the LED covers.
15. Remove the keyboard.
16. Remove the display assembly.
17. Remove the palm rest.
18. Remove the system board.
19. Disconnect the processor fan cable from the system board.
20. Loosen the captive screws that secure the heat sink to the system board.
21. Remove the heat sink and processor fan from the system board.

Replacing the Heat Sink and Processor Fan

To replace the heat sink and processor fan, perform the above steps in reverse order.

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Hinge Covers

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Hinge Covers

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the screw that secures the hinge covers to the computer.
4. Slide the hinge cover toward the back of the computer and remove the hinge cover.
5. Repeat step 3 and step 4 to remove the other hinge cover.

Replacing the Hinge Covers

To replace the hinge covers, perform the above steps in reverse order.

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I/O Board

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the I/O Board

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the SIM.
4. Remove the ExpressCard.
5. Remove the SD memory card.
6. Remove the hard drive assembly.
7. Remove the hinge covers.
8. Remove the mini card door.
9. Remove the wireless local area network (WLAN) card.
10. Remove the memory door.
11. Remove the memory.
12. Remove the coin-cell battery.
13. Remove the optical drive.
14. Remove the LED covers.
15. Remove the keyboard.
16. Remove the display assembly.
17. Remove the palm rest.
18. Remove the system board.
19. Remove the screws that secures the I/O board to the computer.
20. Lift up the left side of the I/O board.
21. Gently push the RJ-45 port from outside to release the I/O board and remove the I/O board from the computer.

Replacing the I/O Board

To replace the I/O board, perform the above steps in reverse order.

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Keyboard

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Keyboard

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the LED covers.
4. Flip the computer over with the right side facing down.
5. Remove the screws that secure the keyboard to the bottom of the computer.
6. Flip the computer over with the right side facing up.
7. Remove the screws that secure the keyboard to the computer.
8. Gently lift up the keyboard to release the snaps on the left and right side of the keyboard and slide the keyboard out of the computer.

Replacing the Keyboard

To replace the keyboard, perform the above steps in reverse order.

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Display Assembly

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Display Assembly

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the hinge covers.
4. Remove the mini card door.
5. Remove the LED covers.
6. Remove the keyboard.
7. Remove the screws that secure the display assembly to the computer.
8. Release the wireless local area network (WLAN) and wireless wide area network (WWAN) antenna cables from their routing guides on the computer.
9. With the display wide open, push the WLAN and WWAN cables through the opening in the system board.
10. Turn over the computer, release the WLAN, WWAN, and ultra-wide band (UWB) cables from their routing path on the computer.
11. Loosen the captive screws that secure the display cable to the computer.
12. Disconnect the display cable from its connector on the system board.
13. Lift up and remove the display assembly from the computer.

Replacing the Display Assembly

To replace the display assembly, perform the above steps in reverse order.

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Display Bezel

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Display Bezel

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Starting from the bottom, gently pry the display bezel inside out from the display assembly using a plastic scribe.
4. When all the snaps loosen, remove the display bezel from the display assembly.

Replacing the Display Bezel

To replace the display bezel, perform the above steps in reverse order.

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Display Panel

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Display Panel

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the display bezel.
4. Remove the screws that secure the display panel to the computer.
5. Turn over the the display panel and gently place it on the keyboard.
6. Release the Mylar tab and disconnect the display cable from its connector on the display panel.
7. Remove the display panel from the computer.
8. Remove the screws that secure the left display bracket to the display panel.
9. Remove the screws that secure the right display bracket to the display panel.
10. Remove the brackets from the display panel.

Replacing the Display Panel

To replace the display panel, perform the above steps in reverse order.

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Optical Drive

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Optical Drive

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the memory door.
4. Remove the screw that secures the optical drive to the computer.
5. Gently lift the metal tab and push the optical drive outward.
6. Slide the optical drive out of the computer.

Replacing the Optical Drive

To replace the optical drive, perform the above steps in reverse order.

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Memory

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Memory

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the memory door.
4. Push apart the memory retention clips to release the memory module.

5. Slide and remove the memory module out of its connector on the system board.

Replacing the Memory

To replace the memory, perform the above steps in reverse order.

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Memory Door

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Memory Door

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Loosen the captive screws that secure the memory door to the computer.
4. Lift up the memory door and remove it from the computer.

Replacing the Memory Door

To replace the memory door, perform the above steps in reverse order.

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Microphone Board

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Microphone Board

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the display bezel.
4. Remove the display panel.
5. Using a plastic scribe, gently pry the microphone board from the display cover.
6. Disconnect the microphone cable from its connector on the microphone board.
7. Remove the microphone board from the computer.

Replacing the Microphone Board

To replace the microphone board, perform the above steps in reverse order.

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Mini Card Door

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Mini Card Door

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Loosen the captive screw that secures the mini card door to the computer.
4. Lift up the mini card door and remove it from the computer.

Replacing the Mini Card Door

To replace the mini card door, perform the above steps in reverse order.

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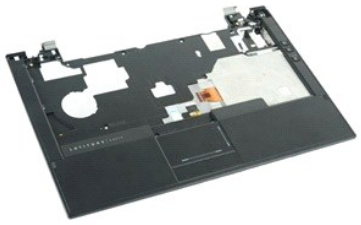
Palm Rest

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Palm Rest



NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the ExpressCard.
4. Remove the hard drive assembly.
5. Remove the hinge covers.
6. Remove the mini card door.
7. Remove the LED covers.
8. Remove the keyboard.
9. Remove the display assembly.
10. Remove the screws that secure the palm rest to the bottom of the computer.
11. Flip the computer over and remove the screws that secure the palm rest to the computer.
12. Disconnect the touch pad, Bluetooth, ExpressCard, volume controls board, and power button cables from their connectors on the system board.
13. Using a plastic scribe, release the snaps from both the sides of the palm rest.
14. Push the palm rest forward and remove it from the base.

Replacing the Palm Rest

To replace the palm rest, perform the above steps in reverse order.

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Subscriber Identity Module (SIM)Card

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the SIM Card

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Press in on the SIM card located on the battery wall.
4. Slide the SIM card out of the computer.

Replacing the SIM Card

To replace the SIM card, perform the above steps in reverse order.

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Secure Digital (SD) Card

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the SD Card

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Press in on the SD card and release it from the computer.
3. Slide the SD card out of the computer.

Replacing the SD Card

To replace the SD Card, perform the above steps in reverse order.

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Secure Digital(SD) Memory Card

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the SD Memory Card

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Press in on the SD memory card and release it from the computer.
3. Slide the SD memory card out of the computer.

Replacing the SD Memory Card

To replace the SD memory card, perform the above steps in reverse order.

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Smart Card Cage

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Smart Card Cage

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the ExpressCard.
4. Remove the hard drive assembly.
5. Remove the hinge covers.
6. Remove the mini card door.
7. Remove the LED covers.
8. Remove the keyboard.
9. Remove the display assembly.
10. Remove the palm rest.
11. Disconnect the ExpressCard data cable from the system board.
12. Remove the screws that secure the smart card cage to the computer.
13. Lift up the smart card cage and remove it from the computer.

Replacing the Smart Card Cage

To replace the smart card cage, perform the above steps in reverse order.

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Speaker Assembly

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Speaker Assembly

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the ExpressCard.
4. Remove the hard drive assembly.
5. Remove the hinge covers.
6. Remove the mini card door.
7. Remove the LED covers.
8. Remove the keyboard.
9. Remove the display assembly.
10. Remove the palm rest.
11. Remove the smart card cage.
12. Remove the display closure sensor.
13. Release the display closure sensor cable from its routing path on the computer.
14. Remove the screws that secure the speaker assembly to the computer.
15. Disconnect the speaker cable from the system board and release the cable from its routing guides on the computer.
16. Lift up the speaker assembly from the computer.

Replacing the Speaker Assembly

To replace the speaker assembly, perform the above steps in reverse order.

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LED Covers

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the LED Covers

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Using a plastic scribe, gently pry the edges of the right LED cover.
4. Lift the right LED cover up and away from the computer.
5. Using a plastic scribe, gently pry the edges of the left LED cover.
6. Lift the left LED cover up and away from the computer.

Replacing the LED Covers

To replace the LED covers, perform the above steps in reverse order.

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System Board

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the System Board

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the phone SIM.
4. Remove the ExpressCard.
5. Remove the SD memory card.
6. Remove the hard drive assembly.
7. Remove the hinge covers.
8. Remove the mini card door.
9. Remove the wireless local area network (WLAN) card.
10. Remove the memory door.
11. Remove the memory.
12. Remove the coin-cell battery.
13. Remove the optical drive.
14. Remove the LED covers.
15. Remove the keyboard.
16. Remove the display assembly.
17. Remove the palm rest.
18. Disconnect the smart card and speaker cables from the system board.
19. Remove the screws that secure the system board to the chassis.
20. Lift the right side of the system board to release it from the I/O board and the TAA board.
21. Remove the system board from the computer.

Replacing the System Board

NOTE: Always replace the TAA board while replacing the system board.

To replace the system board, perform the above steps in reverse order.

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Ultra-Wide Band (UWB)/Latitude ON Flash Card

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the UWB/Latitude ON Flash Card

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the LED covers.
4. Remove the keyboard.
5. If you are removing an UWB card, disconnect the cable from the UWB card.
6. Remove the screw that secures the UWB/Latitude ON Flash card to the computer.
7. Remove the UWB/Latitude ON Flash card from the computer.

Replacing the UWB/Latitude ON Flash Card

To replace the UWB/Latitude ON Flash card, perform the above steps in reverse order.

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Wireless Local Area Network (WLAN) Card

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the WLAN Card

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the memory door.
4. Disconnect the antenna cables from the WLAN card.
5. Remove the screw that secures the WLAN card to the computer.
6. Remove the WLAN from the computer.

Replacing the WLAN Card

To replace the WLAN card, perform the above steps in reverse order.

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Wireless Wide Area Network (WWAN) Card

Dell Latitude E4310 Service Manual

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the WWAN Card

NOTE: You may need to install Adobe Flash Player from **Adobe.com** in order to view the illustrations below.

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the battery.
3. Remove the mini card door.
4. Disconnect the antenna cables from the WWAN card.
5. Remove the screw that secures the WWAN card to the computer.
6. Remove the WWAN card from the computer.

Replacing the WWAN Card

To replace the WWAN card, perform the above steps in reverse order.

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Working on Your Computer

Dell Latitude E4310 Service Manual

- Before Working Inside Your Computer
- Recommended Tools
- Turning Off Your Computer
- After Working Inside Your Computer

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- Ensure that you complete all the steps specified in this section.
- You have read the safety information that shipped with your computer.
- A component can be replaced or—if purchased separately—installed by performing the removal procedure in reverse order.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on the back of the computer.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTE: The color of your computer and certain components may appear differently than shown in this document.

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).
3. If the computer is connected to a docking device (docked), undock it.
4. Disconnect all network cables from the computer.

CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

5. Disconnect your computer and all attached devices from their electrical outlets.
6. Where applicable, disconnect any adapters from the computer.
6. Close the display and turn the computer upside-down on a flat work surface.

CAUTION: To avoid damaging the system board, you must remove the main battery before you service the computer.

7. Remove the main Battery.
8. Turn the computer top-side up.
9. Open the display.
10. Press the power button to ground the system board.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.

CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- #0 Phillips screwdriver
- #1 Phillips screwdriver
- Small plastic scribe

Turning Off Your Computer

CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system:

- **In Windows 7**:

  Click **Start** , then click **Shut down.**

- **In Windows Vista :**

  Click **Start** , then click the arrow in the lower-right corner of the **Start** menu as shown below, and then click **Shut Down**.

- **In Windows XP:**

  Click **Start** and **Turn Off Computer** and then click **Turn Off**.

  The computer turns off after the operating system shutdown process is complete.

2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 4 seconds to turn them off.

After Working Inside Your Computer

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning on your computer.

△ **CAUTION: To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.**

1. Connect any external devices, such as a port replicator, battery slice, or media base, and replace any cards, such as an ExpressCard.
2. Connect any telephone or network cables to your computer.

△ **CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.**

3. Replace the battery.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

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